

## PATENT COOPERATION TREATY

## PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>PCT04-003</b>	FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. <b>PCT/KR2004/000117</b>	International filing date (day/month/year) <b>20 JANUARY 2004 (20.01.2004)</b>	Priority date (day/month/year)
International Patent Classification (IPC) or national classification and IPC <b>C07K 19/00(2006.01)i, C12N 15/00(2006.01)i, C12N 15/48(2006.01)i</b>		
Applicant <b>HUR, Man-Wook et al</b>		
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>4</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____ containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> <p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>		

Date of submission of the demand <b>19 AUGUST 2005 (19.08.2005)</b>	Date of completion of this report <b>21 APRIL 2006 (21.04.2006)</b>
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## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/KR2004/000117

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
  - This report is based on translations from the original language into the following language \_\_\_\_\_ which is the language of a translation furnished for the purposes of:
    - international search (under Rules 12.3 and 23.1(b))
    - publication of the international application (under Rule 12.4)
    - international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on (replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):
  - the international application as originally filed/furnished
  - the description:
 

pages \_\_\_\_\_ as originally filed/furnished  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
  - the claims:
 

pages \_\_\_\_\_ as originally filed/furnished  
 pages\* \_\_\_\_\_ as amended (together with any statement) under Article 19  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
  - the drawings:
 

pages \_\_\_\_\_ as originally filed/furnished  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
  - the sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.
3.  The amendments have resulted in the cancellation of:
  - the description, pages \_\_\_\_\_
  - the claims, Nos. \_\_\_\_\_
  - the drawings, sheets \_\_\_\_\_
  - the sequence listing (specify): \_\_\_\_\_
  - any table(s) related to sequence listing (specify): \_\_\_\_\_
4.  This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
  - the description, pages \_\_\_\_\_
  - the claims, Nos. \_\_\_\_\_
  - the drawings, sheets \_\_\_\_\_
  - the sequence listing (specify): \_\_\_\_\_
  - any table(s) related to sequence listing (specify): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

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## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/KR2004/000117

**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Claims	<u>1-11,13</u>	YES
	Claims	<u>12,14-16</u>	NO
Inventive step (IS)	Claims	<u>9,13</u>	YES
	Claims	<u>1-8,10,11</u>	NO
Industrial applicability (IA)	Claims	<u>1-16</u>	YES
	Claims		NO

**2. Citations and explanations (Rule 70.7)**

The following documents have been considered for the purpose of this written opinion:

D1: WO 2002/085948 A1 (Hur M.W. & Chong D.L.) 31 OCTOBER 2002

D2: WO 2003/016571 A1 (TOOLGEN INC.) 27 FEBRUARY 2003

D3: J. Biol. Chem., Vol. 277(30), pp. 26761-26768 (2002)

D4: Nat. Biotechnol., Vol. 21(3), pp. 275-280 (2003)

D1 discloses a fusion protein of repressing HIV transcription, comprising a zinc finger and a Tat mutant; a gene encoding said fusion protein; a composition of repressing HIV transcription, comprising said fusion protein; and a method for repressing proliferation by using said fusion protein.

D2 discloses a library of chimeric zinc finger domains; and the amino acid sequence of zinc finger domains that recognize particular sites.

D3 discloses a POZ domain which represses transcription by interacting with Sp1 zinc fingers and by interfering with the DNA binding activity of Sp1.

D4 discloses a method for generating sequence-specific DNA-binding proteins and artificial transcription factors by using human zinc fingers as building blocks.

**I. Novelty**

Claims 12 and 14-16 relate to a DNA molecule encoding a zinc finger-TatdMt fusion protein, wherein the TatdMt comprises nucleic acid sequence of SEQ ID NO:15; and a DNA molecule encoding a POZ domain-zinc finger-TatdMt fusion protein, wherein the POZ domain comprises nucleic acid sequence of SEQ ID NO.:16. D1 discloses a fusion protein comprising a POZ domain, a zinc finger (FBI-1) and a TatdMt protein; and nucleic acid sequences of the TatdMt protein and the POZ domain, 100% identical to that of SEQ ID NO. 15 and 16, respectively.

Therefore, claims 12 and 14-16 of the present invention are not considered to be novel under PCT Article 33(2).

(Continued on Supplemental Sheet.)

**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.  
Continuation of:

BOX NO. V

**II. Inventive Step**

Claims 1-8, 10 and 11 relate to a fusion protein comprising an artificial zinc-finger and a TatdMt protein; a fusion protein of claim 1 or 3, further comprising a POZ domain and/or a nuclear localization signal (NLS); and a fusion protein of claim 1 or 3, wherein the TatdMt protein and the POZ domain comprise amino acid sequence of SEQ ID NO. 10 and 9, respectively.

D1 discloses a fusion protein of repressing HIV transcription, comprising a zinc finger and a Tat mutant protein. D2 and D4 disclose chimeric zinc finger domains recognizing particular sites and a method of preparing sequence-specific DNA-binding proteins and artificial transcription factors by using human zinc fingers as building blocks. D3 discloses a fusion protein comprising a POZ domain, zinc fingers and a nuclear localization signal (NLS). The design of an artificial zinc finger and a fusion protein comprising an artificial zinc finger and a TatdMt protein is obvious to a person skilled in the art from the disclosure of D1-D4.

Therefore, claims 1-8, 10 and 11 in this invention do not appear to involve an inventive step under PCT Article 33(3).

**III. Industrial Applicability**

The subject matter of claims 1-16 is considered to be industrially applicable under Article 33(4) PCT.